

Dear Examiner:

Based on a careful review of the Notification of First Office Action, the applicant has amended the claims. A response to the notification is provided below in conjunction with the amended patent application document.

#### Description of the amendments

##### 1. Amendment to claim 1

“Adding an additive material to said magnesium or magnesium alloy while said magnesium or magnesium alloy is above said solidus temperature of magnesium or magnesium alloy to form a mixture ...” recited in claim 1 is amended to “adding an additive material to said magnesium or magnesium alloy while said magnesium or magnesium alloy is above said solidus temperature of magnesium or magnesium alloy and lower than the melting point temperature of said additive material to form a mixture ....”

The above amendment is based on the disclosures in the description, from line 3 from the bottom to line 7 from the bottom of paragraph [0006].

##### 2. Amendment to claim 22

The following limiting technical feature has been added to claim 22: “adding an additive material to said magnesium or magnesium alloy while said magnesium or magnesium alloy is above said solidus temperature of magnesium or magnesium alloy and lower than the melting point temperature of said additive material ....”

The above amendment is based on the disclosures in the description, paragraphs [0006], [0007] and [0014].

Please refer to the replacement sheet of the claims for specific amendments.

Remarks

1. With regard to the deficiency that claims 1 to 21 do not involve an inventive step under Chinese Patent Law, Article 22, paragraph 3

In the Notification of First Office Action, the Examiner states as follows:

“When comparing the technical solution set forth in this claim (claim 1 of the present application) with the technical contents disclosed in comparison reference 1, the distinguishing technical feature is: that this claim defines dispersing said additive material while said magnesium or magnesium alloy is above said solidus temperature of magnesium or magnesium alloy. On the basis of the distinguishing technical feature identified above, it can be known that the technical problem to be solved in practice by the present invention with respect to comparison reference 1 is how to homogenize the alloy liquid.”

For this issue, the applicant holds as follows: the purpose of adding and dispersing the additive material while the magnesium or magnesium alloy is above the solidus temperature of magnesium or magnesium alloy is not merely to homogenize the alloy liquid as mentioned by the Examiner; more importantly, after being added to the molten magnesium alloy, the additive material does not melt, and in this way, when the molten magnesium alloy and the unmelted additive material in the molten magnesium alloy are cooled, the unmelted additive material can be accumulated in the intermediate metal phase with the electrochemical activity.

To further clarify this limiting feature and the effects thereof, the applicant has amended claim 1, which further recites “adding an additive material to said magnesium or magnesium alloy while said magnesium or magnesium alloy is above said solidus temperature of magnesium or magnesium alloy and lower than the melting point temperature of said additive material to form a mixture ...” The foregoing limiting technical feature is not disclosed by comparison reference 1. Moreover, it has been disclosed in the description of the present application, paragraphs [0006] and [0007] as follows: “*during the process of mixing the one or more additives in the molten magnesium or magnesium alloy, the one or more additives are typically not caused to fully melt in the molten magnesium or magnesium alloy ... the never melted particles and/or the newly formed secondary metallic alloys are referred to as in situ particle formation in the molten magnesium composite. Such a process can be used to achieve a specific*

*galvanic corrosion rate in the entire magnesium composite and/or along the grain boundaries of the magnesium composite.*

*“... The invention adopts a feature that is usually a negative in traditional casting practices wherein a particle is formed during the melt processing that corrodes the alloy when exposed to conductive fluids and is imbedded in eutectic phases, the grain boundaries, and/or even within grains with precipitation hardening. This feature results in the ability to control where the galvanically-active phases are located in the final casting, as well as the surface area ratio of the in situ phase to the matrix phase, which enables the use of lower cathode phase loadings as compared to a powder metallurgical or alloyed composite to achieve the same dissolution rates.”*

As mentioned above, in view of the prior art, the amended claim 1 has a prominent substantive feature and notable progress, and thus involves an inventive step under Chinese Patent Law, Article 22, paragraph 3.

For the same reason, claim 1's dependent claims 2 to 21 also involve an inventive step under Chinese Patent Law, Article 22, paragraph 3.

2. With regard to the deficiencies that claims 22 to 30 are not novel under Chinese Patent Law, Article 22, paragraph 2; claims 31 to 40 do not involve an inventive step under Chinese Patent Law, Article 22, paragraph 3

The applicant has amended claim 22, which further recites “adding an additive material to said magnesium or magnesium alloy while said magnesium or magnesium alloy is above said solidus temperature of magnesium or magnesium alloy and lower than the melting point temperature of said additive material.” The foregoing limiting technical feature is not disclosed by comparison reference 1. As a result, in view of comparison reference 1, the amended claim 22 is novel under Chinese Patent Law, Article 22, paragraph 2. For the same reason, its dependent claims 23 to 40 are also novel under Chinese Patent Law, Article 22, paragraph 2.

Moreover, with the adoption of the above technical feature, in addition to the advantages mentioned in section “1.” of this paper, a variety of other advantages can also be achieved. For example, the composite material of the present application can dissolve in a 3% KCl solution at 90°C at a dissolution rate of as high as 325 mg/cm<sup>2</sup>-h (see Example 1 in the description of the present application, etc.), which is significantly higher than the corresponding dissolution rate disclosed in comparison reference 1 (not higher than 74 mg/cm<sup>2</sup>-h). Hence, in view of comparison reference 1, the amended claim 22 has a prominent substantive feature and notable progress, and thus involves an inventive step under Chinese Patent Law, Article 22, paragraph 3. For the same reason, its dependent claims 23 to 40 also involve an inventive step under Chinese Patent Law, Article 22, paragraph 3.

The applicant sincerely hopes that the above amendments and remarks can overcome the deficiencies pointed out by the Examiner, and the explanation provided above can clarify the questions raised by the Examiner. If there are any further issues or questions, please let the applicant know, and offer the applicant the opportunity to make further amendments or supplemental remarks. The applicant is willing to actively cooperate with the Examiner to expedite the prosecution of the present application, such that the present application can be allowed as soon as possible. If necessary, the Examiner may contact the agent WEN Jian by calling 021-64853500 (ext. 2323). The telephone number of the Beijing office of our firm is 010-64401372, which is provided here so that the applicant can reply in time.

Finally, the applicant wishes to express high respect and heartfelt thanks to the Examiner for his or her detailed examination.

## TRANSLATION DECLARATION

I, Samuel Goldfarb, Project Manager for Morningside IP, hereby declare that the attached translation is, to the best of my knowledge and belief, a true and accurate translation from Chinese to English of the document received by this office and designated as OA1 over XIAO.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements are made with the knowledge that false and willful statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements and the like may jeopardize the validity of the submission.

Date: July 2, 2020

Samuel Goldfarb  
Samuel Goldfarb